

# WIRELESS POWER THEFT DETECTION AND INTIMATION SYSTEM BY USING GSM

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## ABSTRACT

*Power Theft is a non –ignorable crime that is highly prevented, and at the same time it directly affected the economy of a nation. Electricity theft is a social evil, so it has to be completely eliminated. Power consumption and losses have to be closely monitored so that the generated power is utilized in a most efficient manner.*

*Electrical power theft detection system is used to detect an unauthorized tapping on transmission lines. Existing system is not able to identify the exact location of tapping. This system actually finds out on which electrical line there is a tapping. This is a real time system. Wireless data transmission and receiving technique is used. This will protect distribution network from power theft done by tapping, meter tampering etc.*

**Key words:** Electrical Power Theft, Wireless Data Transmission and Receiving.

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## 1. INTRODUCTION

Indian power system faces loss of about 30% of its total production of electricity. This loss is very high which takes place because of transmission losses, electricity theft, etc. Major portion of its losses are due to power theft. Power theft is done by taking tapping or hooking from transmission line or by from the meters.

Power Theft is a non ignorable crime and at the same time it directly affected the economy of a nation. Electricity theft a social evil, so it has to be completely

eliminated. Power consumption and losses have to be closely monitored so that the generated power is utilized in a most efficient manner. The system prevents the illegal usage of electricity. At this point of technological development the problem of illegal usage of electricity can be solved electronically without any human control. The implementation of this system will save large amount of electricity, and thereby electricity will be available for more number of consumer than earlier, in highly populated country such as INDIA.

## 2. OBJECTIVES

- This system would provide a simple way to detect an electrical power theft without any human interface.
- It would indicate exact zone and distribution line on which unauthorized tapping is done in real time.
- It would be time saving if distribution company personnel take reading by this wireless technique.

## 3. PROPOSED SYSTEM

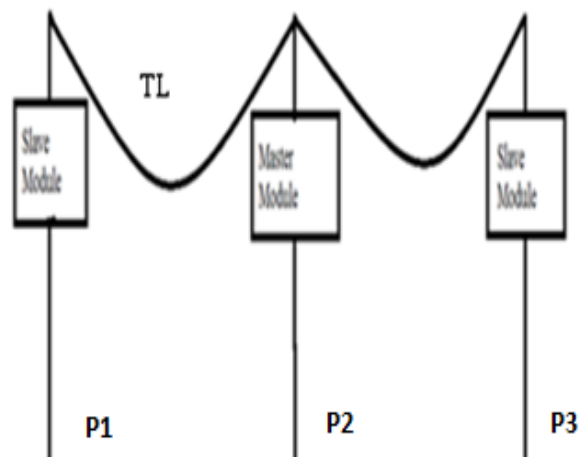
### *Nomenclature*

**TL**= Transmission Line

**P1**= Pole1

**P2**= Pole2

**P3**= Pole3

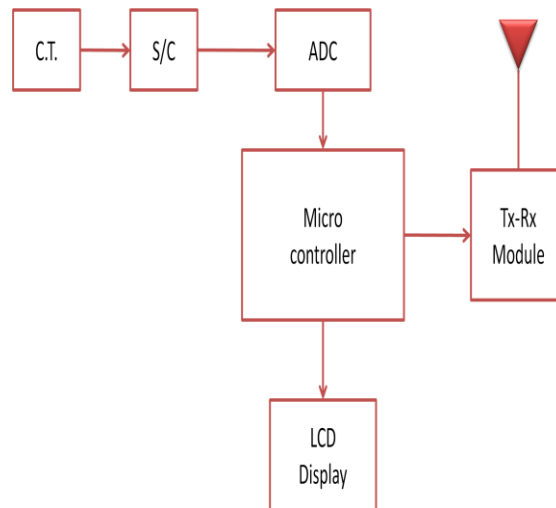


**Figure 1.1** location of the circuit

In our proposed scheme, there is one master circuit and other is slave circuit. Each pole consist this circuitry. One pole consist the master circuit and other poles consist the slave module. In the master and slave module, one microcontroller is used.

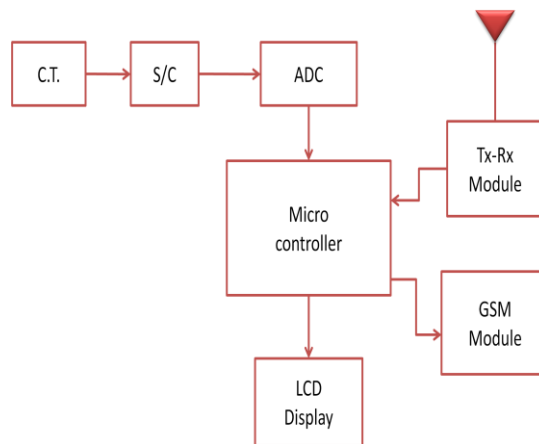
In the microcontroller of the master module comparison between two current of master and slave module is take place. If the difference between this two current is greater than the predefined value, then this send to respective officer through GSM technique.

## 1. Slave Circuit



**Figure 1.2** Block diagram of slave module

## 2. Master Circuit



**Figure 1.3** Block diagram of master module

### A. Current Transformer (C.T.)

Current transformer is used to measure the current in transmission line and convert it into measurable value. And this current sends to signal conditioner. The ratio of CT is 1 ampere to 1 milliamper. The maximum allowable current is 30 ampere.

### B. Signal Conditioner (S/C)

Signal conditioner is used to convert the current into necessary form, which means it converts current into voltage by using resistor.

### C. Analog to Digital Converter (ADC)

ADC 0808 is used to convert analog data to the digital, because microcontroller requires digital input. It sends the voltage in digital form to the microcontroller. Here using one input for current sensing out of 8 inputs. ADC 0808 is 28 pin IC, which require 5V DC supply.

#### D. Tx-Rx module

In slave circuit Tx-Rx module acts as transmitter. It transmits the signal through the antenna to the Tx-Rx module of the master circuit. Tx-Rx module acts as receiver in the master circuit. It sends output to the microcontroller.

#### E. Microcontroller (AT89S52)

Microcontroller is heart of the proposed system. It performs many operations.

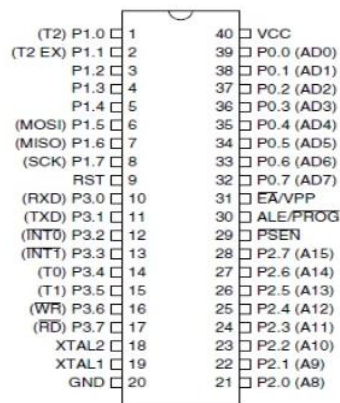


Figure 1.4 pin diagram of AT89S52

In **slave circuit**, microcontroller acquires the input from ADC by port 1 and sends to Tx-Rx module through pin number 10 and 11 also the output sends to the LCD display by port 0.

In **master circuit**, microcontroller acquires the input from ADC as well as Tx-Rx module by means of port 1 and pin number 10, 11 respectively. It compares the current between slave and master circuit. If the difference between these two values of current is predefined value of tolerance, then it sends the signal to the GSM module.

#### F. GSM Module

GSM stands for global system communication for mobile. If microcontroller sends the output to GSM, then it sends to the corresponding computer or mobile.

Here GSM300 is used. GSM300 work on 7-15V AC/DC supply.

#### G. LCD Display

In proposed system 16x2 LCD is used. It is used to display the current in corresponding transmission line.

### 4. METHODOLOGY

Current in the master circuit is  $I_1$  and current in the slave circuit is  $I_2$ . In microcontroller of master circuit, these two current  $I_1$  and  $I_2$  are compared.

If,

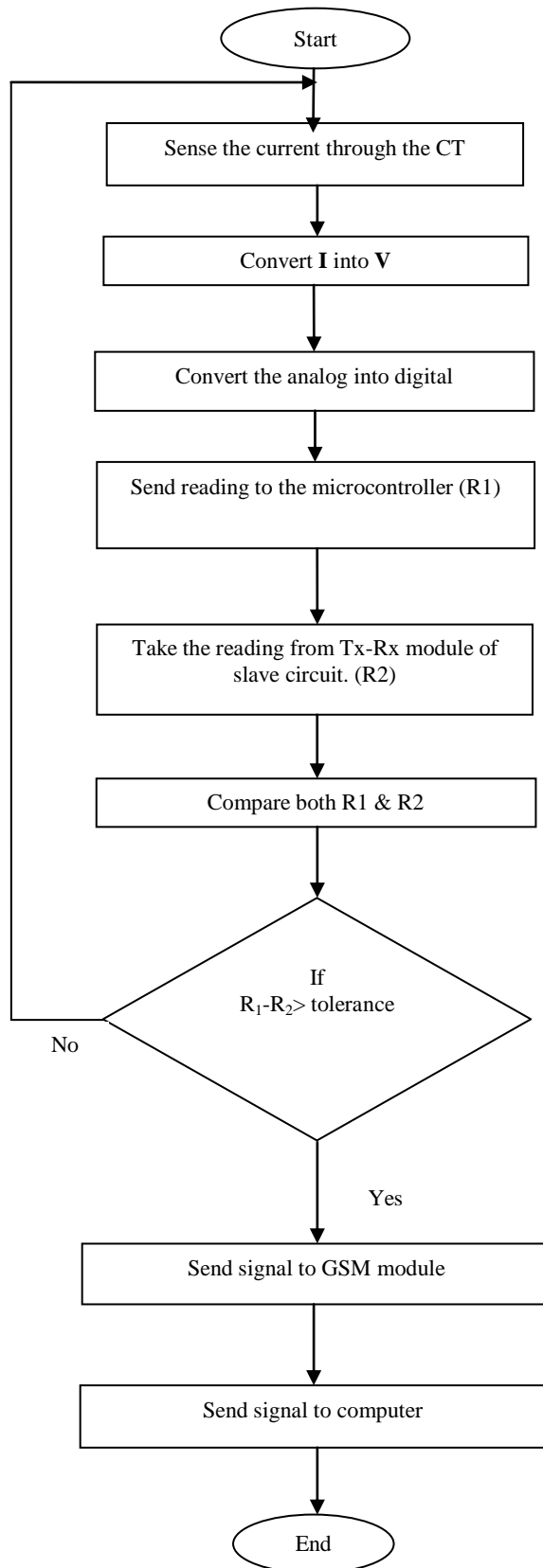
$I_1 - I_2 > \text{Predefined value of tolerance.}$

Then this signal is send to corresponding computer through GSM module.

$I_1 - I_2 \leq \text{Predefined value of tolerance.}$

Then CT starts to take new reading.

## 5. FLOW CHART



## 6. SIMULATION WORK AND RESULT

The figure1.5 shows the simulation of the proposed model, in this interfacing of microcontroller AT89S52, ADC 0808 and LCD is shown. Microcontroller acquires digital input from ADC 0808, compares the current of master circuit and slave circuit. If difference more than predefined value then signals send to mobile of corresponding person through GSM module.

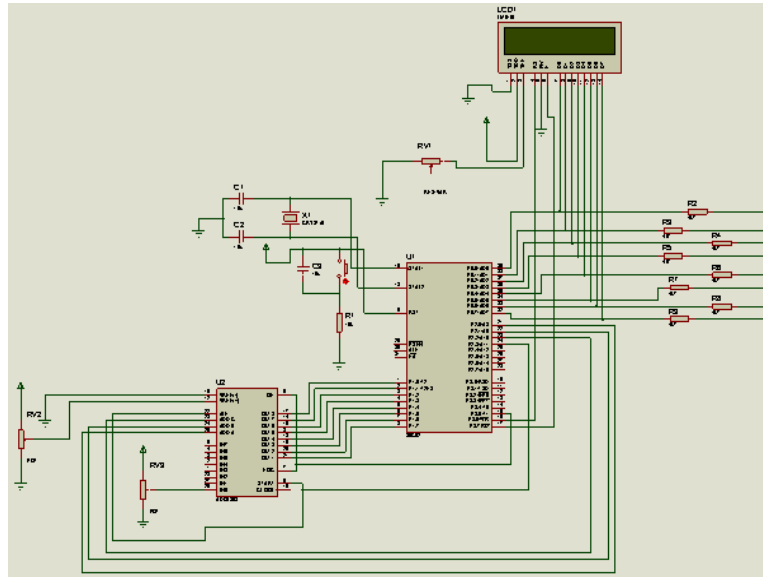


Figure 1.5 simulation of proposed system

## 7. HARDWARE-SETUP



Figure 1.6 Hardware of proposed system

## 8. RESULT



**Figure 1.7** output of hardware

## 9. CONCLUSION

This concluded that, this project is used for low transmission line. From this project monitoring of the transmission line is done. If power theft is done between the transmission lines then GSM module sends the signal to mobile of corresponding person.

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